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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,218	10/15/2003	Joseph Peter Tosey	034300-415	8112

7590 11/12/2008  
Robert E. Krebs  
Thelen Reid & Priest LLP  
P.O. Box 640640  
San Jose, CA 95164-0640

EXAMINER
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ART UNIT	PAPER NUMBER
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2162

MAIL DATE	DELIVERY MODE
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11/12/2008

PAPER

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/687,218

Filing Date: August 11, 2008

Appellant(s): Joseph P.R. Tosey

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John P. Schaub

For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed on August 11, 2008 appealing from the Office action mailed November 11, 2007.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

A statement identifying the related appeals and interferences, which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) Status of Claims**

The statement of the status of the claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejections to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

### **NEW GROUND(S) OF REJECTION**

Claims 18-20, 37-39, 62-64, 81-83, 197-198, and 199-200 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

#### **(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

#### **(8) Evidence Relied Upon**

5774588	Li	6-1998
2004/0097246	Welch	5-2004
2004/0064787	Braun et al.,	4-2004
2004/0260929	Albornoz et al.,	12-2004
6499033	Vagonzzi	12-2002
6496836	Ronchi	12-2002

#### **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims.

## **NEW GROUND(S) OF REJECTION**

### ***Claim Rejections - 35 USC § 101***

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 18-20, 37-39, 62-64, 81-83, 197-198, and 199-200 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As per claim 18, the claim is directed to "submitting and receiving input keyword string". However, the steps in the claim fail to transform underlying subject matter (such as article or materials) to a different state or thing. As such the method of claim 18 is not a patent eligible process under 35 U.S.C. § 101 and is rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claims 19-20 depend on claim 18 and also fail to transform underlying subject matter (such as article or materials) to a different state or thing. Therefore, claims 19-20 are also rejected on the same basis as claim 18.

As per claim 37, the claim is directed to "submitting and receiving input keyword string". However, the steps in the claim fail to transform underlying subject matter (such as article or materials) to a different state or thing. As such the method of claim 37 is not a patent eligible process under 35 U.S.C. § 101 and is rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claims 38-39 depend on claim 37 and also fail to transform underlying subject matter (such as article or materials) to a

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different state or thing. Therefore, claims 38-39 are also rejected on the same basis as claim 37.

As per claim 62, the claim is directed to "submitting and receiving input keyword string". However, the steps in the claim fail to transform underlying subject matter (such as article or materials) to a different state or thing. As such the method of claim 62 is not a patent eligible process under 35 U.S.C. § 101 and is rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claims 63-64 depend on claim 62 and also fail to transform underlying subject matter (such as article or materials) to a different state or thing. Therefore, claims 63-64 are also rejected on the same basis as claim 62.

As per claim 81, the claim is directed to "submitting and receiving input keyword string". However, the steps in the claim fail to transform underlying subject matter (such as article or materials) to a different state or thing. As such the method of claim 81 is not a patent eligible process under 35 U.S.C. § 101 and is rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claims 82-83 depend on claim 81 and also fail to transform underlying subject matter (such as article or materials) to a different state or thing. Therefore, claims 82-83 are also rejected on the same basis as claim 81.

As per claim 197, the claim is directed to "assigning symbols in a language to one of a plurality of groups and comparing keywords". However, the steps in the claim fail to transform underlying subject matter (such as article or materials) to a different

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state or thing. As such the method of claim 197 is not a patent eligible process under 35 U.S.C. § 101 and is rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claim 198 depends on claim 197 and also fails to transform underlying subject matter (such as article or materials) to a different state or thing. Therefore, claim 198 is also rejected on the same basis as claim 197.

As per claim 199, the claim is directed to "assigning symbols in a language to one of a plurality of groups and comparing keywords". However, the steps in the claim fail to transform underlying subject matter (such as article or materials) to a different state or thing. As such the method of claim 199 is not a patent eligible process under 35 U.S.C. § 101 and is rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claim 200 depends on claim 199 and also fails to transform underlying subject matter (such as article or materials) to a different state or thing. Therefore, claim 198 is also rejected on the same basis as claim 199.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1, 2, 13, 16-18, 21, 24-28, 32, 35-37, 40, 43, 45, 46, 57, 60-62, 65, 68-72, 76, 79-81, 84, 87, 89, 90, 101, 104-106, 109, 112-116, 120, 123-125, 128, 131, 133, 134, 142, 145-147, 150-155, 158-160, 163, 165, 166, 174, 177-179, 182-187, 190-192, and 195 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (U.S. Patent Number 5774588) in view of Welch (U.S. Patent Application Number 2004/0097246).

As per claim 1, Li is directed to a method for creating a keyword string database (Li, Column 6 Line 10-21, i.e., *A Lexicon and An example of such a lexicon would be a list of city names in the United States, which could contain about 45,000 valid entries*), and teaches the limitations:

“determining one or more candidate keyword strings to store in said database (Li, Column 6 Line 40-50, i.e. “*valid lexicon strings (such as legal and correct city names)..*”);

“for each of said one more candidate keyword strings, creating single bit vector based at least in part on said each of one or more candidate keyword strings” (Li, Figure 2: *Fold to Signature Vector 210*; and Column 6 Line 40 through Column 9 Line 35, i.e., “*non-positional bi-gram for the lexicon entry string 20*” and *The vector 22 is folded at*



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*step 210 by examining each sequential group of 8 bits and assigning it a 1 or 0 depending on whether any of the bi-grams in the group was previously “set” (had a value of 1)”, said bit vectors for use in comparing an input bit vector with said bit vectors to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings” (Li, Column 9 Line 39 through Column 13 Line 62); and*

*“storing said one or more bit vectors” (Li, Column 7, Line 1-3, i.e., *Signature Vector*) and “a reference to said one or more candidate keyword strings in said database” (Li, Figure 2, *Store pointers to Lexicon Entries in Bucket Address Table 240*).*

Li does not explicitly teach the limitations: “(a method for creating a keyword string database) on a wireless user device” and “said keyword string provided by a user of said wireless user device”.

On the other hand, Welch is directed to “a method for creating a keyword string database on a wireless user device” and “said keyword string provided by a user of said wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20; Paragraph 0025, i.e., In other embodiments, the user may store the textual data **in** the wireless terminal 20 for future reference; and Paragraph 0026, i.e., In some embodiments, the textual data may be searched for the name of a television*

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*show, a person's name, a telephone number or logical network address, a text string that may be identified by a user, program instruction, and/or software code ).*

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the method of Welch, which creates keyword string database on a wireless user device, with the method of Li, which determines keywords, creates bit vectors, and stores said bit vectors and references to said key words, so that the combined method would create a keyword string database on a wireless user device and determine keywords, create bit vectors, stores said bit vectors and references to said keywords. One would have been motivated to do so in order to enable users to store the textual data on a wireless device and search said textual data using keywords (Welch, Paragraphs 0025-0026).

As per claim 2, Li teaches the limitation:

*“wherein said bit vector further comprises at least one bit that represents a non-alphanumeric symbol” (Li, Column 6 Line 43-47, i.e. All lower case letters were mapped to their upper case letters, all between word spaces are stripped, and all non-alphanumeric characters are mapped to a selected specific non-alphanumeric characters (for example, “?”)). It is inherent that those non-alphanumeric will be represented in the signature vector, which represents the original string. (Li, Column 7, Line 1-3, i.e., Signature Vector).*

As per claim 13, Welch in view of Li is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data*; Figure 1: 20) and teaches the limitations:

“receiving an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35);

“creating a single bit vector based at least in part on said input keyword string” (Li, Figure 2: *Fold to Signature Vector 210*; and Column 6 Line 40 through Column 9 Line 35, i.e., *“non-positional bi-gram for the lexicon entry string 20”* and *The vector 22 is folded at step 210 by examining each sequential group of 8 bits and assigning it a 1 or 0 depending on whether any of the bi-grams in the group was previously “set” (had a value of 1)”*; and Li Column 8 Line 51 through Column 9 Line 58);

“comparing said bit vector with one or more other bit vectors representing at least one candidate keyword string to create a set of matching bit vectors” (Li, Column 8 Line 51 through Column 9 Line 36);

“applying a conventional keyword matching algorithm” (“comparing vectors”) to said at least one candidate keyword string represented by said set of matching bit vectors (Li, Column 9 Line 58 through Column 13 Line 62) ; and

“presenting any matching candidate keyword strings” (Li, Figure 2, “Output Final Candidate List” 155).

As per claim 16, Welch in view of Li is directed the method of claim 13 and teaches the limitation:

“wherein said comparing is independent of the order of keyword prefixes in keyword strings” (Li, Column 8 50 through Column 9 Line 59). Note that, in the method and system of Li, *between-word spaces in input strings are stripped* (Column 6 Line 40-50), said input strings are partitioned and hashed, then formed into bi-gram bit vectors and finally transformed into a signature vector (Li, Column 6, Line 40 through Column 7 Line 3). As such, the method of Li is capable of comparing input string independent of the order of keyword prefixes.

As per claim 17, Welch in view of Li is directed to “a method for creating a keyword string database on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“determining one or more candidate keyword strings to store in said database” (Li, Column 6 Line 40-50, i.e. “valid lexicon strings (such as legal and correct city names).....”);

“for each of said one or more candidate keyword strings,  
creating a single bit vector based at least in part on said each of said one or more candidate keyword strings” (Li, Figure 2: *Fold to Signature Vector 210*; and

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Column 6 Line 40 through Column 9 Line 35, i.e., *“non-positional bi-gram for the lexicon entry string 20”* and *The vector 22 is folded at step 210 by examining each sequential group of 8 bits and assigning it a 1 or 0 depending on whether any of the bi-grams in the group was previously “set” (had a value of 1)*, “said bit vector having a bit position for each symbol in an alphabet and having bits set for bit positions corresponding to at least one symbol representing the first symbol of a word in said each of said one or more candidate keyword strings” (Li, Column 6 Line 40 through Column 9 Line 35), “said bit vectors for use in comparing an input bit vector with said one or more bit vectors to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings” (Li, Column 8 Line 51 through Column 9 Line 36); and

“storing said one or more bit vectors and a reference to said one or more candidate keyword strings in said database” (Li, Column 7, Line 1-3, i.e. “Signature Vector” and Li, Figure 2, “Store pointers to Lexicon Entries in Bucket Address Table” 240).

As per claim 18, Li in view of Welch is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data*; Figure 1: 20) and teaches the limitations:

“submitting to said wireless user device an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21 and Column 8 Line 51 through Column 13 Line 62; and Welch, Paragraph 0026); and

“receiving in response to said submitting at least one candidate keyword string where the first symbol of at least one word in each of said at least one candidate keyword string matches the first symbol of the corresponding word in said input keyword string” (Li, Column 6 Line 40 through Column 9 Line 35 and Li, Column 8 Line 51 through Column 9 Line 36).

As per claim 21, Li in view of Welch is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“receiving an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35);

“creating a single bit vector based at least in part on said input keyword string” (Li, Figure 2: *Fold to Signature Vector 210*; and Column 6 Line 40 through Column 9 Line 35, i.e., *“non-positional bi-gram for the lexicon entry string 20”* and *The vector 22 is folded at step 210 by examining each sequential group of 8 bits and assigning it a 1 or 0 depending on whether any of the bi-grams in the group was previously “set” (had a value of 1)* ), “said bit vector having a bit position for each symbol in an alphabet and having bits set for positions corresponding to at least one symbol representing the first

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symbol of a word in said input keyword string” (Li, Column 6 Line 40 through Column 9 Line 35);

“comparing said bit vector with one or more other bit vectors representing at least one candidate keyword string to create a set of matching bit vectors” (Li, Column 8 Line 51 through Column 9 Line 36);

“applying a conventional keyword matching algorithm to said at least one candidate keyword string represented by said set of matching bit vectors” (Li, Column 9 Line 58 through Column 13 Line 62); and

“presenting any matching candidate keyword strings” (Li, Figure 2, “Output Final Candidate List” 155).

Claim 24 is rejected on the same basis as claim 16.

As per claim 25, Li in view of Welch is directed to “a method for comparing keyword strings on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data*; Figure 1: 20) and teaches the limitations:

“determining a relative frequency of use for at least one symbol in a language (Li, Column 7 Line 4-40, i.e. “frequency table”);

“assigning a statistical weighting” (*A counter is accumulated ...*) “to said at least one symbol based at least in part on a relative frequency of use of said at least one symbol” (Li, Column 7 Line 4-40);

“assigning each of said at least one symbol to one of a plurality of groups” (Li, Column 7 Line 4-40, “first group”);

“comparing a first keyword string and a second keyword string based at least in part on whether at least one symbol of said first keyword string is assigned to the same group as at least one corresponding symbol of said second keyword string” (Li, Column 8 Line 51 through Column 9 Line 36);

“presenting a result of said comparing to a user of said wireless user device” (Welch, Paragraph 0026).

As per claim 26, Li in view of Welch is directed to the method of claim 25 and teaches the limitations:

“wherein said assigning further comprises assigning each of said at least one symbol to one of a plurality of groups so as to minimize the difference between the sums of statistical weightings for symbols comprising each group in said plurality of groups” (Li, Column 7 Line 4-40, *groups*).

As per claim 27, Li in view of Welch is directed to the method of claim 25 and teaches the limitation:



“wherein said relative frequency of use comprises the relative frequency of use of symbols in the first character of words in said language” (Li, Column 7 Line 4-40).

As per claim 28, Li in view of Welch is directed to “a method for creating a keyword string database on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data*; Figure 1: 20), and teaches the limitations:

“determining one or more candidate keyword strings to store in said database (Li, Column 6 Line 40-50, i.e., *valid lexicon strings (such as legal and correct city names).....*);

“creating one or more bit vectors based at least in part on said one or more candidate keyword strings” (Li, Column 6 Line 40 through Column 9 Line 35), “each bit of said one or more bit vectors corresponding to one or more symbols in an alphabet, bits having a bit position corresponding to the first symbol of a word in said one or more candidate keyword strings being set” (Li, Column 6 Line 40 through Column 9 Line 35), “said one or more bit vectors for use in comparing an input bit vector with said one or more bit vectors to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings” (Li, Column 8 Line 51 through Column 9 Line 36); and

“storing said one or more bit vectors and a reference to said one or more candidate keyword strings in said database” (Li, Column 7, Line 1-3 and Li, Figure 2, *Store pointers to Lexicon Entries in Bucket Address Table 240*).

As per claim 32, Li in view of Welch is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data*; Figure 1: 20) and teaches the limitations:

“receiving an input keyword string comprising one or more words comprising one or more symbols, each symbol representing the first symbol of a word in a search string” (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35);

“creating a single bit vector based at least in part on said input keyword string, each bit corresponding to one or more symbols in an alphabet, bits having a bit position corresponding to said one or more symbols being set” (Li, Figure 2: *Fold to Signature Vector 210*; and Column 6 Line 40 through Column 9 Line 35, i.e., “*non-positional bi-gram for the lexicon entry string 20*” and *The vector 22 is folded at step 210 by examining each sequential group of 8 bits and assigning it a 1 or 0 depending on whether any of the bi-grams in the group was previously “set” (had a value of 1)*; and also see Li, Column 8 Line 51 through Column 9 Line 58);

“comparing said bit vector with one or more other bit vectors representing at least one candidate keyword string to create a set of matching bit vectors” (Li, Column 8 Line 51 through Column 9 Line 36);

“applying a conventional keyword matching algorithm to said at least one candidate keyword string represented by said set of matching bit vectors” (Li, Column 9 Line 58 through Column 13 Line 62); and

“presenting any matching candidate keyword strings” (Li, Figure 2, “Output Final Candidate List” 155).

Claim 35 is rejected on the same basis as claim 16.

As per claim 36, Li in view of Welch is directed to “a method for creating a keyword string database on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“determining one or more candidate keyword strings to store in said database” (Li, Column 6 Line 40-50, i.e., *valid lexicon strings (such as legal and correct city names).....*);

“creating one or more bit vectors based at least in part on said one or more candidate keyword strings” (Li, Column 6 Line 40 through Column 9 Line 35), “each bit of said one or more bit vector corresponding to one or more symbols in an alphabet, bits

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having a bit position corresponding to a symbol of a prefix of a word in said one or more candidate keyword strings being set” (Li, Column 6 Line 40 through Column 9 Line 35), “said one or more bit vectors for use in comparing an input bit vector with said one or more bit vectors to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings” (Li, Column 8 Line 51 through Column 9 Line 36); and

“storing said one or more bit vectors and a reference to said one or more candidate keyword strings in said database” (Li, Column 7, Line 1-3, i.e., *Signature Vector* and Li, Figure 2: *Store pointers to Lexicon Entries in Bucket Address Table* 240).

As per claim 37, Li in view of Welch is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“submitting an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35); and

“receiving in response to said submitting at least one candidate keyword string where a prefix of a word of a matching candidate keyword string comprises at least one

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symbol that belongs to the same symbol group as the corresponding symbol of the corresponding word in said input keyword string” (Li, Column 8 Line 51 through Column 9 Line 36).

As per claim 40, Li in view of Welch is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“receiving an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35);

“creating a single bit vector based at least in part on said input keyword string” (Li, Figure 2: *Fold to Signature Vector 210*; and Column 6 Line 40 through Column 9 Line 35, i.e., “*non-positional bi-gram for the lexicon entry string 20*” and *The vector 22 is folded at step 210 by examining each sequential group of 8 bits and assigning it a 1 or 0 depending on whether any of the bi-grams in the group was previously “set” (had a value of 1)*); and also see Li, Column 8 Line 51 through Column 9 Line 58), “each bit corresponding to one or more symbols in an alphabet, bits having a bit position corresponding to a prefix of a word in said one or more symbols being set” (Li, Column 6 Line 40 through Column 9 Line 35);

“comparing said bit vector with one or more other bit vectors representing at least one candidate keyword string to create a set of matching bit vectors” (Li, Column 8 Line 51 through Column 9 Line 36);

“applying a conventional keyword matching algorithm to said at least one candidate keyword string represented by said set of matching bit vectors” (Li, Column 9 Line 58 through Column 13 Line 62); and

“presenting any matching candidate keyword strings” (Li, Figure 2: *Output Final Candidate List 155*).

Claim 43 is rejected on the same basis as claim 16.

Claim 45 is rejected on the same basis as claim 1.

Claim 46 is rejected on the same basis as claim 2.

Claim 57 is rejected on the same basis as claim 13.

Claim 60 is rejected on the same basis as claim 16.

Claim 61 is rejected on the same basis as claim 17.

Claim 62 is rejected on the same basis as claim 18.

Claim 65 is rejected on the same basis as claim 21.

Claim 68 is rejected on the same basis as claim 16.

Claim 69 is rejected on the same basis as claim 25.

Claim 70 is rejected on the same basis as claim 26.

Claim 71 is rejected on the same basis as claim 27.

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Claim 72 is rejected on the same basis as claim 28.

Claim 76 is rejected on the same basis as claim 32.

Claim 79 is rejected on the same basis as claim 16.

Claim 80 is rejected on the same basis as claim 36.

Claim 81 is rejected on the same basis as claim 37.

Claim 84 is rejected on the same basis as claim 40.

Claim 87 is rejected on the same basis as claim 16.

Claim 89 is essentially the same as claim 1 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 90 is essentially the same as claim 2 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 101 is essentially the same as claim 13 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 104 is essentially the same as claim 16 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 105 is essentially the same as claim 17 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 106 is essentially the same as claim 18 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 109 is essentially the same as claim 21 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 112 is essentially the same as claim 16 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.



Claim 113 is essentially the same as claim 25 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for comparing strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 114 is essentially the same as claim 26 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for comparing strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 115 is essentially the same as claim 27 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for comparing strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 116 is essentially the same as claim 28 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 120 is essentially the same as claim 21 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 123 is essentially the same as claim 16 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 124 is essentially the same as claim 36 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for creating a keyword string database on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 125 is essentially the same as claim 37 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 128 is essentially the same as claim 40 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 131 is essentially the same as claim 43 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 133 is essentially the same as claim 1 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 134 is essentially the same as claim 2 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 142 is essentially the same as claim 13 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 145 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 146 is essentially the same as claim 17 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 147 is essentially the same as claim 18 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 150 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 151 is essentially the same as claim 25 except that it set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 152 is essentially the same as claim 26 except that it set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 153 is essentially the same as claim 27 except that it set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 154 is essentially the same as claim 28 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 155 is essentially the same as claim 32 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 158 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 159 is essentially the same as claim 36 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 160 is essentially the same as claim 40 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 163 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 165 is essentially the same as claim 1 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 166 is essentially the same as claim 2 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 174 is essentially the same as claim 13 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 177 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 178 is essentially the same as claim 17 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 179 is essentially the same as claim 21 except that it set forth the claimed invention as an apparatus for incremental keyword search rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 182 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 183 is essentially the same as claim 25 except that it set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 184 is essentially the same as claim 26 except that it set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 185 is essentially the same as claim 27 except that it set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 186 is essentially the same as claim 28 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 187 is essentially the same as claim 32 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 190 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 191 is essentially the same as claim 36 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database on a wireless user device and rejected for the same reasons as applied hereinabove.



Claim 192 is essentially the same as claim 40 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 195 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

5. Claim 3-9, 47-53, 91-97, 135-141, and 167-173 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Welch and further in view of Braun (U.S. Patent Application Publication Number 2004/0064787).

Referring to claim 3, Li in view of Welch teaches that bit vectors of claim 1 comprises at one bit that represents a non-alphanumeric symbol but does not explicitly disclose the limitation: "wherein said non-alphanumeric symbol indicates an e-mail address".

However, Braun teaches the limitation:

"wherein said non-alphanumeric symbol indicates an e-mail address" (Braun, et al., Paragraph 0049). Braun teaches a method and system for using a digital pen, wherein non-alphanumeric symbols are used to indicate a serial number or a type of form (Braun, et al., Paragraph 0049, i.e. "Additionally, non-alphanumeric characters

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such as special characters or symbols may be used to enable the back end application to recognize the unique form indication or serial number.”).

At the time the invention was made, it would have obvious to a person of ordinary skill in the art to add the feature of using non-alphanumeric symbols to represent other data such as a serial number, as taught by Braun et al, to the method and system of Welch in view of Li so that, in the resultant method and system, the non-alphanumeric symbol(s) would indicate an email. One would have been motivated to do so in order to simply facilitate search operations.

Claims 4-9 are rejected on the same basis as claim 3. Braun teaches a method and system for using a digital pen, wherein non-alphanumeric symbols are used to indicate a serial number or a type of form (Braun, et al., Paragraph 0049, i.e. “Additionally, non-alphanumeric characters such as special characters or symbols may be used to enable the back end application to recognize the unique form indication or serial number.”). As such, using symbols to represent/indicate other data, including a mobile number, a wired number, a paper mail address, a cost ranking, a quality ranking, a cuisine or the like, are taught by Braun.

Claims 47-53 are rejected on the same basis as claims 3-9 respectively.

Claims 91-97 are essentially the same as claim 3-9 except that the claims set forth the claimed invention as a program storage device readable by a machine rather

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than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 135-141 are essentially the same as claim 3-9 except that the claims set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claims 167-173 are essentially the same as claim 3-9 except that the claims set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

6. Claims 14-15, 19-20, 22-23, 33-34, 38-39, 41-42, 58-59, 63-64, 66-67, 77-78, 82-83, 85-86, 102-103, 107-108, 110-111, 121-122, 126-127, 129-130, 143-144, 148-149, 156-157, 161-162, 175-176, 180-181, 188-189, and 193-194 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Welch and further in view of Albornoz et al. (hereinafter "Albornoz") (U.S. Patent Application Publication Number 2004/0260929).

Referring to claim 14, Li in view of Welch as applied to claim 13 above does not explicitly disclose the limitation: "further comprising preempting said method after a predetermined amount of time".

However, Albornoz teaches the limitation:

“further comprising preempting said method after a predetermined amount of time” (Albornoz, Paragraph 0054). Albornoz teaches a method and system for recovering data object annotations, wherein a search is ended/preempted after a predetermined amount of time (Albornoz, Paragraph 0054, i.e., *The search continuation a criterion is evaluated 1507 according to a predetermined plan and if the criterion is met, the search continues, otherwise, the search is ended 1508. An example continuation is to perform the search continually during a predetermined period of time...*”).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add the feature of preempting/ending a search after a predetermined period of time, as taught by Albornoz to the method and system of Welch in view of Li so that the resultant method and system would comprise preempting the method of claim 10 after a predetermined period of time. One would have been motivated to do so in order to run the search at regular intervals (Albornoz, Paragraph 0053, i.e., *In an alternative embodiment of the system (Fig. 15), the search process may run at regular intervals.*).

Referring to claim 15, aborting/preempting a search process or any other process after a predetermined amount of time (two seconds or three seconds or whatever amount of time) is taught by Albornoz as applied to claim 14.

Claims 14-15, 19-20, 22-23, 33-34, 38-39, 41-42, 58-59, 63-64, 66-67, 77-78, 82-83, and 85-86 are rejected on the same basis as claims 14 and 15 respectively.

Claims 102-103 are essentially the same as claims 14 and 15 respectively except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 107-108 are essentially the same as claims 14 and 15 respectively except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 110-111 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 121-122 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 126-127 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as a program storage device readable by a

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machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 129-130 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 143-144 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 148-149 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 156-157 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 161-162 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 175-176 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 180-181 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for incremental keyword search rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 188-189 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 193-194 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

7. Claim 44, 88, 132, 164, and 196 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Welch and further in view of Vagonzzi (U.S. Patent Number 6499033).

Referring to claim 44, Li in view of Welch as applied to claim 1 is directed to a method for incremental keyword search on a wireless device and teaches the limitations: “receiving an input keyword string comprising one or more words comprising one or more symbols, each symbol representing the first symbol of a word in a search string” (Li, Column 8 Line 51 through Column 9 Line 36 in view of Welch, Paragraphs 0025-0026) and “saving input keyword string” (Li Figure 1B: ***Enter Unverified String & No. of Groups to Hash 120; Compile Initial Candidate List 130; Li*** column 6 Lines 10-28, i.e., *The unverified string might be generated by intensive OCR processing, from a relevant field (such as city name in an address; Particularly* Li Column 8 Lines 57-60, i.e., ***First, at step 120 of Fig 1B, an unverified string 20 is entered.*** Note that the unverified string 20 is saved in the memory throughout all the processing steps of partitioning and hashing , among others, of Li’s method).

However, Li in view of Welch does not explicitly disclose the limitation: “receiving a hierarchy, elements of said hierarchy comprising intermediate nodes and leaf nodes representing one or more keyword strings comprising one or more words comprising one or more symbols” and “searching said hierarchy bit vectors for a match with said input keyword string, said searching comprising, for each said elements of said hierarchy: (saving input keyword string is taught by Li) applying a logical “AND”



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operation to the bit vector of the element and a bit vector based at least in part on said input keyword string, said applying producing a result”.

On the other hand, Vagonzzi teaches a database method and apparatus using hierarchical bit vector index structure comprising:

“receiving a hierarchy, elements of said hierarchy comprising intermediate nodes and leaf nodes representing one or more keyword strings comprising one or more words comprising one or more symbols” (Vagonzzi, Figure 2, Column 5 Line 44 through Column 6 Line 10, i.e. “The indexes 30 are actually collections of keys stored in a B-tree.”);

“creating hierarchy bit vectors corresponding to said one or more keyword strings in said hierarchy” (Vagonzzi, Figure 2, Column 5 Line 44 through Column 6 Line 10, i.e. “The indexes 30 are actually collections of keys stored in a B-tree.”);;

“searching said hierarchy bit vectors for a match with said input keyword string” (Vagonzzi, Column 10 Line 40-65 , i.e. “Query Processing the Indexes”), “said searching comprising, for each of said elements of said hierarchy: (saving said input keyword string is taught by Li); “applying a logical "AND" operation to the bit vector of the element and a bit vector based at least in part on said input keyword string” (Vagonzzi, Figure 2: Query Processor 36, i.e., RANG, **AND**, OR, NOT; Vagonzzi, Column 11, Line 1-27, i.e. “ .... then searches the appropriate index for those target keys, starting with the lowest key.....), “said applying producing a result” (Official Note: a search always returns a result); “if said result is nonzero, removing from said input keyword string any words in said input keyword string that are prefixes of words in the

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element” (...If no key is found, a bit vector of all zeros is returned. If a matching key is found in the index, then the associated link is used to obtain a bit vector for that key....”); “if said input keyword string is empty, adding said element to a list of matched items” ((...If no key is found, a bit vector of all zeros is returned. If a matching key is found in the index, then the associated link is used to obtain a bit vector for that key....”); and “restoring said input keyword string; and rendering said list of matched items” (Vagonzzi, Column 11, Line 1-27).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the method and system which employ both bit vectors and a tree hierarchy as taught by Vagonzzi with the method and system of Welch in view of Li so that the combined method and system would accommodate bit vectors in a tree hierarchy and logical searches into the trees could be performed. One would have been motivated to do so in order to “*provide a method and apparatus for managing large amounts of data in a manner that provides the following benefits: 1. Very fast query response; 2. Fast Update response; 3. Support for .....*” (Vagonzzi, Column 3, Line 7-26).

Claim 88 is rejected on the same basis as claim 44.

Claim 132 is essentially the same as claim 44 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for

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incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 164 is essentially the same as claim 44 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 196 is essentially the same as claim 44 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

8. Claim 197- 206 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Ronchi et al., (U.S. Patent Number 6496836).

Referring to claim 197, Li teaches assigning groups based on frequency of bit vectors (Li, Column 7 Line 4-40, "groups") and compares groups based on signature vector. But Li does not explicitly disclose assigning at least one symbol to each group and comparing keywords based on said symbol (s). However, Ronchi et al. teaches a method and system for symbol-based memory language, wherein symbols are assigned to a plurality of groups (Ronchi et al, Column 8 Line 32-67 and Column 3 Line 39-44) and based on the symbol selected, a caller is directed to a particular group of communication handlers (Ronchi et al., Column 3 Line 39-44).

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At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add the feature of employing symbols to groups and using said symbol(s) to channel a caller to a group of handlers based on said symbol(s), as taught by Ronchi et al., to the method and system of Li, which compares bit-vectors which represent strings at least in part based on groups of different bit vector frequencies, so that the resultant method and system would comprise assigning at least one symbol to each group and comparing keywords based on said symbol (s). One would have been motivated to do so in order to “find a way to record information pertaining to their customers quickly, and to access this information consistently, without delay, and in a readily understandable format in order to best satisfy the expectations of their customers.” (Ronchi et al. Column 2, Line 34-41)

Referring to claim 198, Li in view of Ronchi et al. as discussed above in regard to claim 197 above discloses the invention as claimed. Li in view of Ronchi et al. teaches the method of claim 197 wherein said plurality of groups corresponds with a telephone keyboard symbol grouping (Ronchi et al., Column 10 Line 1-15).

Claims 199-200 are rejected on the same basis as claims 197-198 respectively.

Claims 201-202 are essentially the same as claim 197-198 respectively except that the claims set forth the claimed invention as a program storage device readable by a machine rather than a method for comparing keyword strings on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 203-204 are essentially the same as claim 197-198 respectively except that the claims set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 205-206 are essentially the same as claim 197-198 respectively except that the claims set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device and rejected for the same reasons as applied hereinabove.

#### **(10) Response to Arguments**

Referring to Independent Claims 1, 45, 89, 133, and 165, Appellant argued that *“Independent Claims 1, 45, 89, 133, and 165 recite, inter alia, for each of said one or more candidate keyword strings, creating a single bit vector based at least in part on said each of said one or more candidate keyword strings, said bit vector for use in comparing an input bit vector with said bit vector to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings, said input keyword string provided by a user of said wireless user device. (emphasis added) These features are not disclosed in either Li. or Welch, even if, arguendo, these references were properly combinable. These features are also not suggested by Li and Welch, considered singularly or in combination”* (Appellant’s argument, page 46 of Appeal Brief, second paragraph).

Examiner respectfully disagrees all of the allegations as argued. Examiner, in his

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previous office action, gave detail explanation of claimed limitation and pointed out exact locations in the cited prior art. Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. See MPEP 2111 [R-1] Interpretation of Claims-Broadest Reasonable Interpretation.

During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969).

In response, it is respectfully pointed out that Li in Column 6 Line 40-50 teaches "determining one or more candidate keyword strings to store in said database" (i.e. "*valid lexicon strings (such as legal and correct city names)..*"), Lin in Li, Figure 2, and Column 6 Line 40 through Column 9 Line 35, among others, teaches "for each of said one more candidate keyword strings, creating single bit vector based at least in part on said each of one or more candidate keyword strings" (Li, Figure 2: *Fold to Signature Vector 210* (Note herein that Li's "Signature Vector" is a **single-bit vector**); and Column 6 Line 40 through Column 9 Line 35, i.e., "*non-positional bi-gram for the lexicon entry string 20*" and **The vector 22** is folded at step 210 by examining each sequential group of 8 bits and **assigning it a 1 or 0 depending on whether any of the bi-grams in the group was previously "set" (had a value of 1)**"), Li in Column 9 Line 39 through Column 13 Line 62 teaches "said bit vectors for use in comparing an input bit vector with said bit vectors to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings" (Li, Column 9

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Line 39 through Column 13 Line 62, that is, “Further Reducing the Lexicon by Comparing Vectors”), Li in column 6 line 67 through Column 70 line teaches “storing said one or more bit vectors” (i.e., *This results in an 85 bit vector 25 called the **signature vector** of the string. All the signature vectors for the lexicon can be pre-calculated. The original lexicon entry is reformatted at step 215 with each line **containing** the original string and its **corresponding signature vector***”; Herein please note that said signature vectors are “stored” in the memory of the SPARC2 workstation as recited in column 13 lines 1-2 of Li) and Welch teaches a method for creating a keyword string database on a wireless user device” and “said keyword string provided by a user of said wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether **one or more keywords** or other criteria are present in the textual data*; Figure 1: 20; Paragraph 0025, i.e., *In other embodiments, the user may **store the textual data in the wireless terminal 20 for future reference***; and Paragraph 0026, i.e., *In some embodiments, the textual data may be searched for the name of a television show, a person’s name, a telephone number or logical network address, a text string that may be identified by a user, program instruction, and/or software code* ).

Therefore, Li in view of Welch teaches “*one or more candidate keyword strings, creating a single bit vector based at least in part on said each of said one or more candidate keyword strings, said bit vector for use in comparing an input bit vector with said bit vector to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings, said input keyword string provided by a user of said wireless user device*”.

Appellant also argued that *"And rather than storing the one or more bit vectors as required by claims 1, 45, 89, 133, and 165, Li discloses storing pointers to lexicon entries the bucket address table"* (Appellant's argument, page 46 of Appeal Brief, last paragraph).

In response, it is respectfully pointed out that Li teaches "storing" signature vectors (which maps to "bit vectors" of the claimed invention) in column 6 line 67 through Column 70 line as *"This results in an 85 bit vector 25 called the **signature vector**" of the string. All the signature vectors for the lexicon can be pre-calculated. The original lexicon entry is reformatted at step 215 with each line **containing** the original string and its **corresponding signature vector**";* Herein please note that said signature vectors are "stored" in the memory of the SPARC2 workstation as recited in column 13 lines 1-2 of Li.

Appellant also argued that *"Accordingly, a prima facie case of obviousness has not been established, and the rejection of claims 1, 45, 89, 133, and 165, and the claims dependent therefrom, based on the combination of Li and Welch, is improper"* (Appellant's argument, page 47 of Appeal Brief, first paragraph).

In response, it is respectfully pointed out that, a prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art. Once such a case is established, it is incumbent upon appellant to go forward with objective evidence of unobviousness. In re Fielder, 471 F.2d 640, 176 USPQ 300 (CCPA 1973). The teachings of Li in view of Welch would appear to have suggested the claimed



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subject matter to a person of ordinary skill in the art and a prima facie case of obviousness has been established. As such, the combination of Li and Welch is proper.

Referring to independent claims 13, 57, 101, 142, and 174, Appellant argued that *“Thus the arguments made with respect to independent claims 1, 45, 89, 133, 165 apply here as well. Claims 1, 45, 89, 133, and 165 being, allowable, claims 13, 57, 101, 142, and 174 must also be allowable”* (Appellant’s argument, page 47 of Appeal Brief, second paragraph).

In response, it is respectfully pointed that because claims 1, 45, 89, 133, and 165 are not allowable over the combination of Lin in view of Welch, claims 13, 57, 101, 142, and 174 are not allowable on the same basis.

Referring to independent claims 17, 61, 105, 146, and 178, Appellant argued that *“Thus, the arguments made with respect to independent claims 1, 45, 89, 133, and 165, apply here as well. Claims 1, 45, 89, 133, and 165 being allowable, claims 17, 61, 105, 146, and 178 must also be allowable”* (Appellant’s argument, page 47 of Appeal Brief, last paragraph).

In response, it is respectfully pointed that because claims 1, 45, 89, 133, and 165 are not allowable over the combination of Lin in view of Welch, claims 17, 61, 105, 146, and 178 are not allowable on the same basis.

Referring to independent claims 18, 62, and 106, Appellant argued that *“Independent Claims 18, 62, and 106 recite, inter alia, receiving in response to said submitting at least one candidate keyword string where the first symbol of at least one word in each of said at least one candidate keyword string matches the first symbol of the corresponding word in said input keyword string. These features are not disclosed in*

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*either Li. or Welch, even if, arguendo, these references were properly combinable.*

*These features are also not suggested by Li and Welch, considered singularly or in combination” (Appellant's argument, page 48 of Appeal Brief, second paragraph).*

In response, it is respectfully pointed out that Li in view of Welch is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., “*In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data;* Figure 1: 20) and teaches the limitations in question as follows: “submitting to said wireless user device an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21, i.e., *An example of such a lexicon would be a list of city names in the United States, which could contain about 45,000 valid entries. The unverified string might be generated by intensive OCR processing, from a relevant field (such as city name in an address). There may be errors or problems in the unverified string that make it hard to identify. The term "string" is used broadly herein to refer to individual words or sequences of words or other characters. For example, in the sequence "132 Front St., Elm Wood, Ind. 45509" the entire sequence may be a string, as well as the individual components or any combination thereof. In this example, the city name field contains "Elm Wood";* Li Column 8 Line 51 through Column 13 Line 62, particularly the paragraphs of Li which teaches comparing string vectors under the title of “Further Reducing the Lexicon by Comparing Vectors” in column 9 of Li; and Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether **one or more keywords** or other criteria are present in*

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*the textual data; Figure 1: 20; Paragraph 0025, i.e., In other embodiments, the user may store the textual data in the wireless terminal 20 for future reference; and Paragraph 0026, i.e., In some embodiments, the textual data may be searched for the name of a television show, a person's name, a telephone number or logical network address, a text string that may be identified by a user, program instruction, and/or software code);* and "receiving in response to said submitting at least one candidate keyword string where the first symbol of at least one word in each of said at least one candidate keyword string matches the first symbol of the corresponding word in said input keyword string" (Li, Column 6 Line 40 through Column 9 Line 35 and Li, Column 8 Line 51 through Column 9 Line 36, particularly the paragraphs of Li which teaches comparing string vectors under the title of "Further Reducing the Lexicon by Comparing Vectors" in column 9 of Li).

Referring to independent claims 21, 65, 109, 145, and 179, Appellant argued that *"thus the arguments made with respect to claims 1, 45, 89, 133, and 165 apply here as well. Claims 1, 45, 89, 133, and 165 being allowable, claims 21, 65, 109, 145, and 179 must be allowable* (Appellant's argument, page 48 of Appeal Brief, last paragraph).

In response, it is respectfully pointed that because claims 1, 45, 89, 133, and 165 are not allowable over the combination of Lin in view of Welch, claims 21, 65, 109, 145, and 179 are not allowable on the same basis.

Appellant argued that *"Accordingly, a prima facie case of obviousness has not been established, and the rejection of claims 21, 65, 109, 145, and 179, and the claims dependent therefrom, based on the combination of Li and Welch is improper"* (Appellant's argument, page 49 of Appeal Brief, first paragraph).

In response, it is respectfully pointed out that, a prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art. Once such a case is established, it is incumbent upon appellant to go forward with objective evidence of unobviousness. In re Fielder, 471 F.2d 640, 176 USPQ 300 (CCPA 1973). The teachings of Li in view of Welch would appear to have suggested the claimed subject matter to a person of ordinary skill in the art and a prima facie case of obviousness has been established with respect to claims 1, 45, 89, 133, and 165, and a prima facie case of obviousness has been established with respect to 21, 65, 109, 145, and 179, and the claims dependent therefrom on the same basis as applied to claims 1, 45, 89, 133, and 165. As such, the combination of Li and Welch is proper.

Referring to claims 25, 69, 113, 151, and 183, Appellant argued that *“Independent Claims 25, 69, 113, 151, and 183 recite, inter alia, determining a relative frequency of use for at least one symbol in a language. These features are not disclosed in either Li. or Welch, even if, arguendo, these references were properly combinable. These features are also not suggested by Li and Welch, considered singularly or in combination. The Examiner contends these features are disclosed by Li. The Applicant respectfully disagrees. In support of the Examiner's contention, the Examiner refers to portions of Li that disclose accumulating a counter for each of 85 bits in a signature vector based on the presence of particular bi-grams in lexicon strings. A bi-gram vector based on the English language alphabet would have bits representing the character combinations AA, AB, AC, AD... ZW, ZX, ZY, ZZ, for a total of 676 entries. The Applicant respectfully submits that the Examiner's attempt to equate a symbol in*

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*Claims 25, 69, 113, 151, and 183 with a bi-gram disclosed by Li is improper, as the bi-gram of Li is a combination of characters. Thus, Li discloses determining the frequency of a combination of characters; Li does not disclose determining a relative frequency of use for at least one symbol in a language. For this reason, the 35 U.S.C. § 103(a) rejection of Claims 25, 69, 113, 151, and 183 based on Li in view of Welch is unsupported by the art*" (Appellant's argument, page 49 of Appeal Brief, second and last paragraph).

In response, it is respectfully pointed out that Specification of Applicant's claimed invention defines "symbol" in paragraph 0008 of the U.S. Patent Application Publication 2005/0086234 as *"As the user type 'w' in an input window, the system instantly responds with keyword strings having at least one keyword that stars with the symbol 'w'".* According to this definition, "symbol" in the claimed invention is equivalent to "character". Note that Li in Column 6 Lines 45-48 teaches *"all non-alphanumeric characters are mapped to a selected specific non-alphanumeric character (for example '?'")*. Apparently, Li teaches determining single characters such as non-alphanumeric characters in addition to determining combination of characters. As such, "frequency table" in Column 7 Lines 4-40 also determines single characters, that is, frequency of single characters. Therefore, Applicant's argument is moot.

Appellant also argued that *"since Li does not disclose determining a relative frequency of use for at least one symbol in a language, Li cannot teach assigning a statistical weighting to said at least one symbol based on at least in part on a relative frequency of user of said at least one symbol as required by claims 25, 69, 113, 151, and 183"* (Appellant's argument, page 50 of Appeal Brief).

In response, it is respectfully pointed out that, as discussed above, Li teaches determining frequency of use of single characters (i.e., symbol), Li evidently assigns a statistical weighting to said at least one symbol based on a relative frequency of use of said symbol as in Column 7 Line 4-40 (i.e., “*A counter is accumulated ...*”) to said at least one symbol based at least in part on a relative frequency of use of said at least one symbol” (Li, Column 7 Line 4-40). As such, Appellant’s argument is inappropriate.

Appellant also argued that “*And since Li discloses analysis based on bi-grams, Li cannot be said to disclose assigning each of said at least one symbol to one of a plurality of groups. For this additional reason, the 35 U.S.C. § 103(a) rejection of Claims 25, 69, 113, 151, and 183 based on Li in view of Welch is unsupported by the art*” (Appellant’s argument, page 50 of Appeal Brief, second paragraph).

In response, it is respectfully pointed out that, as discussed above, Li teaches determining frequency of use of single characters (i.e., symbol), Li evidently assigns each of said at least one symbol to one of a plurality of groups (Li, Column 7 Line 4-40, “first group”);

Appellant argued that “*Accordingly, a prima facie case of obviousness has not been established, and the rejection of claims 25, 69, 113, 151, and 183, and the claims dependent therefrom, based on the combination of Li and Welch, is improper*” (Appellant’s argument, page 50 third paragraph).

In response, it is respectfully pointed out that, a prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art. Once such a case is established, it is incumbent upon appellant to go forward with objective

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evidence of unobviousness. In re Fielder, 471 F.2d 640, 176 USPQ 300 (CCPA 1973).

The teachings of Li in view of Welch would appear to have suggested the claimed subject matter to a person of ordinary skill in the art and a prima facie case of obviousness has been established with respect to claims 25, 69, 113, 151, and 183, and the claims dependent therefrom. As such, the combination of Li and Welch is proper.

Referring to independent claims 28, 72, 116, 154, and 186, Appellant argued that *"Thus the arguments made with respect to independent claims 1, 45, 89, 133, and 165 apply here as well. Claims 1, 45, 89, 133, and 165 being allowable, claims 28, 72, 116, 154, and 186 must also be allowable"* (Appellant's argument page 50 last paragraph of Appeal Brief through page 51 first paragraph of Appeal Brief).

In response, it is pointed out that responses made with respect to claims 1, 45, 89, 133, and 165 apply here as well, that is, said claims are not allowable over the combination of Li in view of Welch.

Referring to independent claims 32, 33, 76, 120, 159, and 191, Appellant also argued that *"Thus the arguments made with respect to independent claims 1, 45, 89, 133, and 165 apply here as well. Claims 1, 45, 89, 133, and 165 being allowable, claims 32, 33, 76, 120, 159, and 191 must also be allowable"* (Appellant's argument page 51 of Appeal Brief third paragraph).

In response, it is pointed out that responses made with respect to claims 1, 45, 89, 133, and 165 apply here as well, that is, said claims are not allowable over the combination of Li in view of Welch.

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Referring to independent claims 36, 80, 124, 159, and 191, Appellant argued that *“Thus the arguments made with respect to independent claims 1, 45, 89, 133, and 165 apply here as well. Claims 1, 45, 89, 133, and 165 being allowable, claims 36, 80, 124, 159, and 191 must also be allowable”* (Appellant's argument page 52 of Appeal Brief first paragraph).

In response, it is pointed out that responses made with respect to claims 1, 45, 89, 133, and 165 apply here as well, that is, said claims are not allowable over the combination of Li in view of Welch.

Referring to claims 37, 81, and 125, Appellant argued that *“Thus the arguments made with respect to independent claims 18, 62, and 106 apply here as well. Claims 18, 62, and 106 being allowable, claims 37, 81, and 125 must also be allowable”* (Appellant's argument page 52 of Appeal Brief third paragraph).

In response, it is pointed out that responses made with respect to claims 18, 62, and 106 apply here as well, that is, said claims are not allowable over the combination of Li in view of Welch.

Referring to independent claims 40, 84, and 128, Appellant argued that *“Thus the arguments made with respect to independent claims 1, 45, 89, 133, and 165 apply here as well. Claims 1, 45, 89, 133, and 165 being allowable, claims 40, 84, and 128 must also be allowable”* (Appellant's argument page 53 of Appeal Brief first paragraph).

In response, it is pointed out that responses made with respect to claims 1, 45, 89, 133, and 165 apply here as well, that is, said claims are not allowable over the combination of Li in view of Welch.



Referring claims 3-9, 47-53, 91-97, 135-141, and 167-173, Appellant argued that “Claims 3-9, 47-53, 91-97, 135-141, and 167-173 depend directly or indirectly from base claims 1, 45, 89, 133, and 165, respectively. Welch fails to remedy the above-mentioned shortcomings of Li with respect to claims 1, 45, 89, 133, and 165. Accordingly, claims 3-9, 47- 53, 91-97, 135-141, and 167-173, which by definition include the limitations of claims 1, 45, 89, 133, and 165, respectively, are patentable over the combination of these references” (Appellant’s arguments, page 53 of Appeal Brief, third paragraph ).

In response, it is pointed out that responses made with respect to claims 1, 45, 89, 133, and 165 apply here as well, that is, said claims are not allowable over the combination of Li in view of Welch.

Referring to claims 14-15, 19-20, 22-23, 33-34, 38-39, 41-42, 58-59, 63-64, 66-67, 77-78, 82- 83, 85-86, 102-103, 107-108, 110-111,121-122, 126-127, 129-130, 143-144, 148-149, 156-157, 161-162, 175-176, 180-181,188-189, and 193-194 under 35 U.S.C. § 103(a), Appellant argued that “*Claims 14-15, 19-20, 22-23, 33-34, 38-39, 41-42, 58-59, 63-64, 66-67, 74-75, 77-78, 82-83, 85-86, 102-103, 107-108, 110-111,121-122, 126-127, 129-130, 143-144, 148-149, 156-157, 161-162, 175-176, 180-181,188-189, and 193-194 depend directly or indirectly from base claims 13, 18, 21, 32, 37, 40, 57, 62, 65, 76, 81, 84, 101,106, 109, 120, 125, 128, 142, 147, 155, 160, 174, 179, 187, and 192, respectively. Welch fails to remedy the above-mentioned shortcomings of Li with respect to claims 13, 18, 21, 32, 37, 40, 57, 62, 65, 76, 81, 84, 101,106, 109, 120, 125, 128, 142, 147, 155, 160, 174, 179, 187, and 192. Accordingly, claims 14-15, 19-20, 22-23, 33-34, 38-39, 41-42, 58-59, 63-64, 66-67, 77-78, 82- 83, 85-86, 102-103, 107-*

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108, 110-111, 121-122, 126-127, 129-130, 143-144, 148-149, 156-157, 161-162, 175-176, 180-181, 188-189, and 193-194, which by definition include the limitations of claims 13, 18, 21, 32, 37, 40, 57, 62, 65, 76, 81, 84, 101, 106, 109, 120, 125, 128, 142, 147, 155, 160, 174, 179, 187, and 192, respectively, are patentable over the combination of these references” (Appellant’s argument, page 53 last paragraph of Appeal Brief through page 54 first paragraph of Appeal Brief).

In response it is pointed out that since claims 13, 18, 21, 32, 37, 40, 57, 62, 65, 76, 81, 84, 101, 106, 109, 120, 125, 128, 142, 147, 155, 160, 174, 179, 187, and 192 are not allowable over the combination of Li in view of Welch, the claims in question are also not allowable over the combination of Li in view of Welch.

Referring to claims 44, 88, 132, 164, and 196, Appellant argued that *“Independent Claims 44, 88, 132, 164, and 196 recite, inter alia, receiving from a user of said wireless user device an input keyword string comprising one or more words comprising one or more symbols, each symbol representing the first symbol of a word in a search string. These features are not disclosed in either Li., Welch, or Vagonzzi, even if, arguendo, these references were properly combinable. These features are also not suggested by Li, Welch, or Vagonzzi, considered singularly or in combination. The arguments made above with respect to independent Claims 32, 76, 120, 155, and 187 apply here as well”* (Appellant’s argument, page 54 of Appeal Brief, second paragraph ).

In response, it is pointed that said limitations of said claims are taught by Li in view of Welch and further in view of Vagonzzi as follows: “receiving an input keyword string comprising one or more words comprising one or more symbols, each symbol representing the first symbol of a word in a search string” (Li, Column 8 Line 51 through

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Column 9 Line 36 in view of Welch, Paragraphs 0025-0026) and “saving input keyword string” (Li Figure 1B: **Enter Unverified String** & No. of Groups to Hash 120; Compile Initial Candidate List 130; Li column 6 Lines 10-28, i.e., *The unverified string might be generated by intensive OCR processing, from a relevant field (such as city name in an address; Particularly Li Column 8 Lines 57-60, i.e., **First, at step 120 of Fig 1B, an unverified string 20 is entered.*** Note that the unverified string 20 is saved in the memory throughout all the processing steps of partitioning and hashing , among others, of Li’s method), “receiving a hierarchy, elements of said hierarchy comprising intermediate nodes and leaf nodes representing one or more keyword strings comprising one or more words comprising one or more symbols” (Vagonzzi, Figure 2, Column 5 Line 44 through Column 6 Line 10, i.e. *“The indexes 30 are actually collections of keys stored in a B-tree.”*), “creating hierarchy bit vectors corresponding to said one or more keyword strings in said hierarchy” (Li in view of Vagonzzi, Figure 2, Column 5 Line 44 through Column 6 Line 10, i.e. *“The indexes 30 are actually collections of keys stored in a B-tree.”*)), “searching said hierarchy bit vectors for a match with said input keyword string” (Vagonzzi, Column 10 Line 40-65 , i.e. *“Query Processing the Indexes”*), “said searching comprising, for each of said elements of said hierarchy: (saving said input keyword string is taught by Li); “applying a logical “AND” operation to the bit vector of the element and a bit vector based at least in part on said input keyword string” (Vagonzzi, Figure 2: Query Processor 36, i.e., RANG, **AND**, OR, NOT; Vagonzzi, Column 11, Line 1-27, i.e. “ .... then searches the appropriate index for those target keys, starting with the lowest key.....), “said applying producing a result”

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(Official Note: a search always returns a result); “if said result is nonzero, removing from said input keyword string any words in said input keyword string that are prefixes of words in the element” (*...If no key is found, a bit vector of all zeros is returned. If a matching key is found in the index, then the associated link is used to obtain a bit vector for that key....*”); “if said input keyword string is empty, adding said element to a list of matched items” (*...If no key is found, a bit vector of all zeros is returned. If a matching key is found in the index, then the associated link is used to obtain a bit vector for that key....*”); and “restoring said input keyword string; and rendering said list of matched items” (Vagonzzi, Column 11, Line 1-27).

Appellant also argued that “*Nowhere does the cited portion of Vagonzzi disclose for each of said elements of a hierarchy, saving an input keyword string*” (Appellant's argument, page 55 of Appeal Brief, second paragraph).

In response, it is pointed out that At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the method and system which employ both bit vectors and a tree hierarchy as taught by Vagonzzi (Figure 2 of Vagonzzi, and Column 5 Line 44 through Column 6 Line 10, i.e. “*The indexes 30 are actually collections of keys stored in a B-tree*”)with the method and system of Welch in view of Li so that the combined method and system would accommodate bit vectors in a tree hierarchy and logical searches into the trees could be performed. One would have been motivated to do so in order to “*provide a method and apparatus for managing large amounts of data in a manner that provides the following*

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*benefits: 1. Very fast query response; 2. Fast Update response*" (Vagonzzi, Column 3, Line 7-26).

Applicant also argued that *"Independent Claims 44, 88, 132, 164, and 196 also recite, inter alia, said searching comprising, for each of said elements of said hierarchy ... applying a logical "AND" operation to the bit vector of the element and a bit vector based at least in part on said input keyword string. These features are not disclosed in either Li., Welch, or Vagonzzi, even if, arguendo, these references were properly combinable. These features are also not suggested by Li, Welch, or Vagonzzi, considered singularly or in combination. Nowhere does the cited portion of Vagonzzi disclose for each of said elements of a hierarchy, applying a logical "AND" operation to the bit vector of the element and a bit vector based at least in part on an input keyword string"* (Appellant's argument, page 55 last paragraph of Appeal Brief).

In response, it is pointed out that Vagonzzi teaches *"applying a logical "AND" operation to the bit vector of the element and a bit vector based on the input keyword string"* in Figure 2: Query Processor 36, i.e., RANG, **AND**, OR, NOT of Vagonzzi, and in Column 11, Line 1-27, i.e. " .... then searches the appropriate index for those target keys, starting with the lowest key".

Appellant also argued that *"Independent Claims 44, 88, 132, 164, and 196 also recite, inter alia, said searching comprising, for each of said elements of said hierarchy ... if said result is nonzero, removing from said input keyword string any words in said input keyword string that are prefixes of words in the element. These features are not disclosed in either Li., Welch, or Vagonzzi, even if, arguendo, these references were*

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*properly combinable. These features are also not suggested by Li, Welch, or Vagonzzi, considered singularly or in combination. Nowhere does the cited portion of Vagonzzi disclose for each of said elements of a hierarchy, if a search result is nonzero, removing from an input keyword string any words in the input keyword string that are prefixes of words in an element”* (Appellant’s argument, page 56 first paragraph of Appeal Brief).

In response, it is pointed out that Li in view of Welch and further in view of Vagonzzi teaches a searching method comprising , for each of said elements of said hierarchy... if said result is nonzero, removing from said input keyword string any words in said input keyword string that are prefixes words in the element (Vagonzzi, Column11 Lines 1-27, i.e., *if no key is found, a bit vector of all zeroes is returned*).

Appellant also argued that “*Claims 44, 88, 132, 164, and 196 also recite, inter alia, said searching comprising, for each of said elements of said hierarchy ... if said input keyword string is empty, adding said element to a list of matched items. These features are not disclosed in either Li., Welch, or Vagonzzi, even if, arguendo, these references were properly combinable. These features are also not suggested by Li, Welch, or Vagonzzi, considered singularly or in combination. Nowhere does the cited portion of Vagonzzi disclose for each of said elements of a hierarchy, if an input keyword string is empty, adding the element to a list of matched items”* (Appellant’s argument, page 56 second paragraph of Appeal Brief ).

In response, it is pointed out that Li in view of Welch and further in view of Vagonzzi teaches the limitation , *if an input keyword string is empty, adding the*

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*element to a list of matched items (Vagonzzi, Column11 Lines 1-27, i.e., if a matching key is found in the index, then the associated used to obtain a bit vector for that key).*

Appellant also argued that “*Claims 44, 88, 132, 164, and 196 also recite, inter alia, said searching comprising, for each of said elements of said hierarchy ... restoring said input keyword string. These features are not disclosed in either Li., Welch, or Vagonzzi, even if, arguendo, these references were properly combinable. These features are also not suggested by Li, Welch, or Vagonzzi, considered singularly or in combination. Nowhere does the cited portion of Vagonzzi disclose for each of said elements of a hierarchy, restoring an input keyword string*” (Appellant’s argument, page 56 last paragraph through page 57 first paragraph of Appeal Brief).

In response, it is pointed out that Li in view of Welch and further in view of Vagonzzi teaches the limitation *restoring an input keyword string* (Vagonzzi, Column 11 Lines 1-27, particularly “*the ALL bit corresponding to the fine slice number identified by the link is set to the same value (0 or 1) as the ALL bit contained in the link, with the other ALL bits being cleared to zero*”).

Referring to claims 197-200, Appellant argued that “*The arguments made above with respect to independent claims 25, 69, 113, 151 and 183 apply here as well, as recited limitations are also found in claims 25, 69, 113, 151, and 183*” (Appellant’s argument, page 57 of Appeal Brief, third paragraph).

In response, it is pointed out that response made above with respect to claims 25, 69, 113, 151, and 183 apply here as well and said claims in question are not allowable just as claims 25, 69, 113, 151, and 183 are not allowable.

The teachings of Li in view of Welch in view of respective references would appear to have suggested the claimed subject matter to a person of ordinary skill in the art and a prima facie case of obviousness has been established. As such, the combination of Li and Welch is proper.

In conclusion, for the above reasons, it is believed that the rejections should be sustained.

#### **(11) Related Proceeding(s) Appendix**

Copies of the court or Board decision(s) in the Related Appeals and Interferences section of this examiner's answer are provided herein.

The examiner's answer contains a new ground of rejection set for in the section **(9)** above. Accordingly, Appellant must within **TWO MONTHS** from the date of this answer exercise one of the following two options to avoid *sua sponte* **dismissal of the appeal** as to the claims subject to the new ground of rejection:

**(1) Reopen prosecution:** Request that prosecution be reopened before the primary examiner by filing a reply under 37 CFE 1.111 with or without amendment, affidavit or other evidence. Any amendment, affidavit or other evidence must be relevant to the new grounds of rejection. A request that complies with 35 CFR 41.39(b)(1) will be entered and considered. Any request that prosecution be reopened will be treated as a request to withdraw the appeal.

**(2) Maintain appeal.** Request that the appeal be maintained by filing a reply brief as set forth in 37 CFR 41.41. Such a reply must address each new ground of rejection



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as set forth in 37 CFR 41.37(c)(1)(vii) and should be in compliance with the other requirements of 37 CFR 41.37(c). If a reply brief filed pursuant to 37 CFR 41.39(b)(2) is accompanied by any amendment, affidavit or other evidence, it shall be treated as a request that prosecution be reopened before the primary examiner under 37 CFR 41.39(b)(1).

Extension of time under 37 CFR 1.136(a) are not applicable to the TWO MONTH time period set forth above. See 37 CFR 1.136(b) for extensions of time to reply for ex parte reexamination proceedings.

Respectfully Submitted,

/dennis myint/

Dennis Myint

Examiner, AU-2162

**A Technology Center Director or designee must personally approve the new ground(s) of rejection set for in section (9) above by signing below:**

/ANDREW H HIRSHFELD/

Director, Technology Center 2100

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October 8, 2008

Conferences:

/John Breene/  
Supervisory Patent Examiner  
Art Unit 2162

/Vincent F. Boccio/  
Primary Examiner, Art Unit 2169  
Appeal Specialist TC 2100

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John P. Schaub  
Reg. No. 42,125  
Thelen Reid Brown Raysman & Steiner LLP  
P.O. box (640640)  
San Jose, CA-95164-0640